

APPENDIX

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : REINHOLD KLIPPER et al.
SERIAL NO. : 09/643,194
FILED : AUGUST 21, 2000
FOR : PROCESS FOR PREPARING MONO-
DISPERSE ANION EXCHANGERS
GROUP NO : 1713
EXAMINER : B. LIPMAN

DECLARATION UNDER 37 CFR 1.132

I, Reinhold Klipper of Geilenkircherstr. 29, 50933 Cologne, Germany, declare as follows:

1. I studied chemistry at the University of Cologne and obtained a doctorate in chemistry in 1978. Since 1981 I have been employed by Bayer AG in Leverkusen, Germany, as a research chemist for development of new ion exchangers. With the spin-off of Bayer's Chemicals division in 2005 I am now employed at Lanxess Deutschland GmbH as a research chemist in the Business Unit ION-EXCHANGERS.
2. I am an inventor of and familiar with the subject matter of the above-identified United States patent application.
3. I performed or supervised the following experiments:

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A. Preparations

Monodisperse anion exchangers (Examples 6 and 8) have been prepared according to Examples 1a) to 1c) and 2 of the above-identified United States patent application, except with different amounts of crosslinker, accordingly in Example 6, the anion exchanger was prepared from monomer droplets (Lewapole) of 5 % by weight crosslinker (divinylbenzene) and 61 % by weight porogene to obtain macroporous anion exchangers. And in Example 8, the anion exchanger was prepared from monomer droplets (Lewapole) of 12 % weight crosslinker (divinylbenzene) and 44 % by weight porogene to obtain macroporous monodisperse anion exchangers.

For comparison, heterodisperse anion exchangers (Examples 7 and 9) were prepared from a heterodisperse bead polymer according to Example 6 of U.S. Patent 3.006,866 ("Corte et al '866"), wherein, in Example 7, the anion exchanger was prepared from monomer droplets (Lewapole) of 5 % by weight crosslinker (divinylbenzene) and 61 % by weight porogene to obtain macroporous, heterodisperse anion exchangers. And in Example 9, the anion exchanger was prepared from monomer droplets (Lewapole) of 12 % by weight crosslinker (divinylbenzene) and 44 % by weight porogene to obtain macroporous, heterodisperse anion exchangers.

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B. Properties**TABLE 1**

Resin Type	Degree of Substitution of the aromatic rings of the bead polymer ¹	Total amount of basic groups in mmol ²	Determination of the stability of the resin by the roll test ³	Pressure loss (Kpa/m) ⁴
Example 6 Monodisperse anion exchanger (inventive)	1.08	3598	93	0.42
Example 7 Heterodisperse anion exchanger (inventive)	0,91	3138	85	0.40
Example 8 Monodisperse anion exchanger (inventive)	0,92	2760	Not Determined	0.37
Example 9 Heterodisperse anion Exchanger (comparative)	0,59	1844	Not Determined	0.30

1,2,3 Test performed as described in the pending patent application

4 Test performed as described in Dr. Klipper's Declaration dated September 5, 2002.

C. Results

The Table and comparison tests illustrate that the process of the present invention leads to monodisperse anion exchangers (Examples 6 and 8) having larger amounts of basic groups as a result of higher degree of substitution and higher stability and a better utilizable capacity of the resin. The total amount of basic groups and the utilizable capacity is lower in Examples 8 and 9 because a higher degree of crosslinking has the consequence of lower substitution degree and lower amounts of basic groups.

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Nevertheless even in Example 8 the total amount of basic groups is surprisingly much higher than in the heterodisperse Example 9.

4. The experiments described above show that monodisperse anion exchangers prepared according to the process of the present application were obtained in higher yields and exhibited unexpectedly improved performance than the comparative heterodisperse anion exchangers prepared according to US 3,006,866.
5. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Signed at Leverkusen, Germany, this 12th day of August 2005.



Reinhold Klipper